UNITED STATES PATENT AND TRADEMARK OFFICE

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EXAMINER
THOMAS, MIA M

ART UNIT	PAPER NUMBER
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

PTOL-90A (Rev. 04/07)

	Application No.	Applicant(s)
Office Action Summary	10/522,467	LESELLIER ET AL.
	Examiner	Art Unit
	Mia M. Thomas	2624

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>24 March 2009</u>.
2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.
3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>1-9</u> is/are pending in the application.
    4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5)☐ Claim(s) _____ is/are allowed.
6)☒ Claim(s) <u>1 and 7-9</u> is/are rejected.
7)☐ Claim(s) <u>2-6</u> is/are objected to.
8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.
10)☒ The drawing(s) filed on <u>24 March 2009</u> is/are: a)☒ accepted or b)☐ objected to by the Examiner.
    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
    a)☐ All   b)☐ Some * c)☐ None of:
      1.☐ Certified copies of the priority documents have been received.
      2.☐ Certified copies of the priority documents have been received in Application No. _____.
      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)
2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3)☐ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date _____.
4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____.
5)☐ Notice of Informal Patent Application
6)☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. This Office Action is responsive to applicant's remarks received on 24 March 2009.

Claims 1-9 are pending in the application and stand rejected. Claims 1, 2, 5, 6, 8 and 9 have

been amended. Claims 1, 7, 8 and 9 are independent claims. A complete response to

applicant's remarks follows here below.

Claim Rejections - 35 USC § 101

2. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of
> matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the
> conditions and requirements of this title.

The USPTO "Interim Guidelines for Examination of Patent Applications for Patent Subject
Matter Eligibility" (Official Gazette notice of 22 November 2005), Annex IV, reads as follows:

> Descriptive material can be characterized as either "functional descriptive material" or "nonfunctional
> descriptive material." In this context, "functional descriptive material" consists of data structures and
> computer programs which impart functionality when employed as a computer component. (The
> definition of "data structure" is "a physical or logical relationship among data elements, designed to
> support specific data manipulation functions." The New IEEE Standard Dictionary of Electrical and
> Electronics Terms 308 (5th ed. 1993).) "Nonfunctional descriptive material" includes but is not limited
> to music, literary works and a compilation or mere arrangement of data.

> When functional descriptive material is recorded on some computer-readable medium it becomes
> structurally and functionally interrelated to the medium and will be statutory in most cases since use of
> technology permits the function of the descriptive material to be realized. Compare In re Lowry, 32
> F.3d 1579, 1583-84, 32 USPQ2d 1031, 1035 (Fed. Cir. 1994) (claim to data structure stored on a
> computer readable medium that increases computer efficiency held statutory) and Warmerdam, 33
> F.3d at 1360-61, 31 USPQ2d at 1759 (claim to computer having a specific data structure stored in
> memory held statutory product-by-process claim) with Warmerdam, 33 F.3d at 1361, 31 USPQ2d at
> 1760 (claim to a data structure per se held nonstatutory).

> In contrast, a claimed computer-readable medium encoded with a computer program is a computer
> element which defines structural and functional interrelationships between the computer program and
> the rest of the computer which permit the computer program's functionality to be realized, and is thus
> statutory. See Lowry, 32 F.3d at 1583-84, 32 USPQ2d at 1035.

3. Claim 9 is rejected under 35 U.S.C. 101 because the claimed invention is directed to non-

statutory subject matter as follows. Claim 9 defines a computer program product embodying

functional descriptive material (i.e., a computer program or computer executable code). However, the claim does not define a "computer-readable medium or computer-readable memory" and is thus non-statutory for that reason (i.e., "When functional descriptive material is recorded on some computer-readable medium it becomes structurally and functionally interrelated to the medium and will be statutory in most cases since use of technology permits the function of the descriptive material to be realized" – Guidelines Annex IV). The scope of the presently claimed invention encompasses products that are not necessarily computer readable, and thus NOT able to impart any functionality of the recited program. The examiner suggests amending the claim(s) to embody the program on "computer-readable medium" or equivalent; assuming the specification does NOT define the computer readable medium as a "signal", "carrier wave", or "transmission medium" which are deemed non-statutory (refer to "note" below). Any amendment to the claim should be commensurate with its corresponding disclosure.

Should the full scope of the claim as properly read in light of the disclosure encompass non-statutory subject matter such as a "signal", the claim as a whole would be non-statutory. In the case where the specification defines the computer readable medium or memory as statutory tangible products such as a hard drive, ROM, RAM, etc, as well as a non-statutory entity such as a "signal", "carrier wave", or "transmission medium", the examiner suggests amending the claim to *include* the disclosed tangible computer readable media, while at the same time *excluding* the intangible media such as signals, carrier waves, etc.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness

rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented and
> the prior art are such that the subject matter as a whole would have been obvious at the time the
> invention was made to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 1, 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Martins et al. (US

6,438,275 B1) in combination with Yazici et al. (US 6333990 B1), Knutrud (US 6612159 B1) and

Kryukov et al. (US 7003174 B2).

Regarding Claim 8: (Currently amended) Martins teaches a device for processing a sequence

of digital images, intended to detect a grid corresponding to blocking artefacts within said

sequence of digital images, said device comprising: (Refer to Figure 1; also at column 2, line

53; at column 3, line 14; "Sender 12 stores or has access to at least a portion of a digital

multimedia content represented as a sequence of audio and video data signals commonly

called streams." at column 4, lines 47-56) said device comprising:

Martins expressly teaches means for determining a current reference grid (RG(t))from a current

spatial grid (SG(t)) (Refer to figure 2, numeral 20) and a preceding reference grid (RG(t- 1))

(Refer Figure 2, numeral 24).

Yazici teaches means for detecting a spatial grid (SG) within a portion of the image, (Refer to

Figure 2, numeral 210; "small enough to ensure that the grid line artifact has a substantially

constant spatial grid line frequency." at column 3, line 16-32)

determining a current reference grid (RG(t))from a current spatial grid (SG(t)) and a preceding

reference grid (RG(t- 1)) based on a row comparison between said current reference grid and

said preceding reference grid, wherein a number of grid rows differing between the current

spatial grid and the preceding reference grid is smaller than one third a number of grid rows of

the preceding reference grid; ("The nearest sub-window is determined by comparing the

distance between the center pixel of alternative sub-windows meeting the named criteria

(whether the sub-window is non-edgy) to the center pixel of the sub-window being replaced,

then selecting the sub-window meeting the named criteria, and being closest in distance to the

sub-window being replaced." at column 5, line 15);

Knutrud teaches means for outputting said corrected blocking artifacts (Refer to Figure 4 and 5;

"The invention also enables use of the measurement results to automatically provide the

correction data needed for the stepper operator, without the intervention of a process engineer,

to make a determination on pass, fail, and/or stepper adjustments. This invention also enables

use of the measurement results to track the information for SPC purposes." at column 6, line

28).

Kryukov teaches means for correcting the blocking artifacts which are present in the current

reference grid RG(t)) in accordance with a value of the indicator (ind) associated with each of

said sets ("A method of reducing artifacts in an image previously processed by block transform

encoding according to the invention may comprise the steps of: determining block boundaries;

determining an approximate metric of artifact visibility; optionally interpolating across block

boundaries; adaptively filtering luminance; optionally adaptively filtering chrominance; adaptively

adjusting local saturation variation; and adaptively simulating high spatial frequency image detail; wherein the adaptive steps are executed to an extent or in an amount depending on the said metric or standard or measurement of artifact visibility." at column 5, line 45).

At the time that the invention was made, it would have been obvious to the skilled artisan to combine the teachings of Martins, Yazici, Knutrud and Kryukov.

Martins, Yazici, Knutrud and Kryukov are combinable because they are in the same field of processing regarding edge enhancement and filtering regarding edge testing and transformations.

Since all of the claimed elements were known in the prior art at the time of the invention, one skilled in the art could have combined the teachings of Martins, Yazici, Knutrud and Kryukov by known methods to detect these blocking artifacts based on a row comparison and analyze these elements to further execute correction means. The combination of the teachings of Martins, Yazici, Knutrud and Kryukov would have presented no change in the respective functions of these teachings and the combination would have yielded predictable results to one of ordinary skill in the art at the time of the invention.

The suggestion/motivation to combine the teachings of Martins, Yazici, Knutrud and Kryukov would have been to "reduce artifacts in an image previously processed by block transform encoding. It would have also been obvious to combine the teachings of Martins, Yazici, Knutrud and Kryukov to determine block boundaries; determine an approximate metric of artifact visibility; optionally interpolating across block boundaries; adaptively filter luminance; optionally

adaptively filter chrominance; adaptively adjusting local saturation variation; and adaptively

simulate high spatial frequency image detail; wherein the adaptive steps are executed to an

extent or in an amount depending on the metric or standard or measurement of artifact

visibility." (abstract, Kryukov).

Therefore, it would have been obvious to one of ordinary skill in the art to combine the teachings

of Martins, Yazici, Knutrud and Kryukov to obtain the specified claimed elements of Claim 8.

Regarding Claim 1: (Currently amended) Claim 1 recites claim limitations that equally resemble

those claim limitations as recited at claim 8. Claim 1 recites the operational method steps that

are used in the device recited at Claim 8. Claim 1 stands rejected for the same reasons,

motivation and rational as rejected above at Claim 8.

6.   Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Martins et al. (US

6,438,275 B1) in combination with Yazici et al. (US 6333990 B1), Knutrud (US 6612159 B1) and

Kryukov et al. (US 7003174 B2) and further in view of Nio et al.(US 6738528 B1).

Regarding Claim 7: (Previously presented) Nio teaches a television receiver comprising:

a processing device-to detect a reference grid (RG) within a sequence of digital images ("As is

described in the foregoing, in a video processing device (a television receiver, for example)

using digital video signals subjected to lossy encoding on a predetermined image block basis,

the present invention can be applied, first, to correctly detect and eliminate block noise to be

arisen when the video signal is decoded, and second, to correctly regenerate a dot clock." at

column 31, line 39) executing the steps of: the operational method steps of Claim 1 and

executed by the device of Claim 8.

Claim 7 recites claim limitations that equally resemble those claim limitations as recited at claim

8 and 1. Claim 7 recites a television receiver used as a video processing device that executes

the operational method steps of Claim 1 that are used in the device recited at Claim 8. Claim 7

stands rejected for the same reasons, motivation and rational as rejected above at Claim 8 and

1.

Allowable Subject Matter

7.   Claims 2-6 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112,

2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim

and any intervening claims.

Response to Arguments

8.   Applicant's arguments, see pages 6 and 7, with respect to Drawing Objections have been

fully considered and are persuasive.

9.   Applicant's arguments see page 7 with respect to Claim 1-6 (rejection under 35 U.S.C. 101)

have been fully considered and are persuasive. Claims 1-6 have been amended to further

recite a processing of a sequence of digital images intended to detect a grid corresponding

to blocking artifacts within a sequence of digital images using a circuit suitably programmed

to perform the operational steps of Claim 1. A reasonable interpretation of the specification

has indicated that independent claim 1 in addition to a few other recited steps of this claim

require a programmed computer and / or computer operated circuitry to accomplish the

intended purpose of this invention and there is no disclosed indication of manual and/or mental activity involved.

10. Applicant's arguments at pages 7 and 8 with respect to claim 9 as rejected under 35 U.S.C. 101 have been fully considered but they are not persuasive. Applicant states that "Applicant believes that the rejection of claim 9 is incorrect in that the subject matter claimed refers to a circuit that performs the claimed steps when instructions, which are stored in a programming memory, are loaded into the circuit. The claim is not referring to a signal or other intangible media; but to the circuit that is loaded with the provided instructions. In addition, while the claims are read in view of the teachings of the specification, the Office Action is impermissibly incorporating the teaching of the specification into the claims in that the Office Action refers to a reading operation that may be performed by means of a communication network. However, applicant submits that reading the programmable memory whether by a locally stored computer-readable medium or a remotely located computer-readable medium via a network are comparable steps and that the reading element is not the subject matter claimed. Accordingly, applicant believes that the reason for the rejection has been overcome and respectfully requests that the rejection be withdrawn."

The Examiner <u>respectfully disagrees.</u> The recitation of Claim 9 does not encompass a computer-readable medium or a computer readable storage medium that would make this claim statutory. The recitation of a computer program product comprising a set of instructions could be a piece of paper or document file which does not deem this claim language statutory. In this case the claims do not expressly define a computer readable storage medium or memory as statutory tangible products. However, the examiner suggests

amending the claim to *include* the disclosed tangible computer readable storage media, while at the same time *excluding* the intangible media such as signals, carrier waves, etc. The rejection of Claim 9 under 35 U.S.C. 101 stands.

11. Applicant's arguments, see page 8, with respect to Claim 1, 2 and 8 (rejection under 35 USC 112, second paragraph) have been fully considered and are persuasive. Applicant has amended the claims to correct the deficiencies noted in the previous office action and the rejection of claims 1, 2 and 8 under 35 USC 112, second paragraph have been withdrawn.

12. Applicant's arguments, see page 8, with respect to Claim 5 and 6 (rejection under 35 USC 112, first paragraph) have been fully considered and are persuasive. Applicant has amended the claims to correct the deficiencies noted in the previous office action and the rejection of claims 5 and 6 under 35 USC 112, first paragraph have been withdrawn.

13. Applicant's arguments, see page 9, with respect to Claim 5 (objections) have been fully considered and are persuasive. Applicant has amended the claims to correct the deficiencies noted in the previous office action and the objection of Claim 5 has been withdrawn.

14. Applicant's arguments at pages 9 and 10, regarding Claim 8 with respect to the 35 USC 103 rejections have been considered but are moot in view of the new ground(s) of rejection. See newly rejected claim 8 above.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mia M. Thomas whose telephone number is (571)270-1583. The examiner can normally be reached on Monday-Thursday 8am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bhavesh M. Mehta can be reached on 571-272-7453. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Andrew W Johns/
Primary Examiner, Art Unit 2624

Mia M Thomas
Examiner
Art Unit 2624